NON-PUBLIC?: N
ACCESSION #: 9201020129
LICENSEE EVENT REPORT (LER)

FACILITY NAME: Braidwood 2 PAGE: 1 OF 03

DOCKET NUMBER: 05000457

TITLE: Generator Trip Caused by Spurious Actuation of Neutral Ground Relay
EVENT DATE: 12/01/91 LER #: 91-006-00 REPORT DATE: 12/23/91

OTHER FACILITIES INVOLVED: NONE DOCKET NO: 05000

OPERATING MODE: 1 POWER LEVEL: 050

THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR SECTION:
50.73(a)(2)(iv)

LICENSEE CONTACT FOR THIS LER:
NAME: G. Sharpe, Technical Staff Engineer TELEPHONE: (815) 458-2801 Ext. 2544

COMPONENT FAILURE DESCRIPTION:
CAUSE: SYSTEM: COMPONENT: MANUFACTURER:
REPORTABLE NPRDS:

SUPPLEMENTAL REPORT EXPECTED: NO

ABSTRACT:

At 1738 on December 1, 1991 a Generator Neutral Ground Overcurrent backup protective relay actuated and tripped the Unit 2 Main Generator. A turbine and reactor trip followed as designed. Operators performed applicable steps of the reactor trip response procedures and stablized the plant. The generator trip was caused by the neutral ground backup relay. The design purpose of this relay is to actuate when an unbalanced voltage condition exists between the three phases of the generator. An oscillograph, used to record voltage applied across the neutral resistor, indicated that no fault had existed on the generator. Additionally, a megger reading of the generator confirmed that no internal fault existed. With no generator fault, the cause of the trip was in the potential transformer circuitry. Upon completion of troubleshooting, the cause could not be determined. Precautionary measures were taken to prevent an intermittent potential fuse failure from causing another generator trip.

The potential transformer fuses were replaced and the suspect circuitry will be monitored.

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END OF ABSTRACT

A. PLANT CONDITIONS PRIOR TO EVENT:

Unit: Braidwood 2; Event Date: December 1, 1991; Event Time: 1738
Mode: 1 - Power Operation; Rx Power: 50%;
RCS AB! Temperature/Pressure: NOT/NOP;

B. DESCRIPTION OF EVENT:

There were no systems or components inoperable at the beginning of the event which contributed to the severity of the event.

At 1738 on December 1, 1991 a Generator Neutral Ground Overcurrent backup protective relay actuated and tripped the Unit 2 Main Generator (TG) TB!. A turbine and reactor trip followed as designed. All control rods fully inserted and due to the turbine trip, steam generator (MS) SB! levels shrunk to the lo-lo level setpoint. Both Auxiliary Feedwater (AF) BA! pumps auto-started as designed to restore steam generator level.

All systems functioned as designed. Operators performed applicable steps of the reactor trip response procedures and stablized the plant. AF was secured after steam generator levels were restored to their normal operating level.

The appropriate NRC notification via the ENS phone system was made at 1930 pursuant to 10CFR50.72(b)(2)(ii).

This event is being reported pursuant to 10CFR50.73(a)(2)(iv) - any event or condition that resulted in manual or automatic actuation of any Engineered Safety Feature, including the Reactor Protection System.

C. CAUSE OF EVENT:

Inspection of generator protection relays identified that the voltage balance relay and the generator neutral ground backup relay had actuated. The actuation of the voltage balance relay causes the

generator voltage regulator to shift from automatic voltage control to manual control. Therefore, the actuation of this relay did not cause the generator trip.

The generator trip was caused by the neutral ground backup relay. The design purpose of this relay is to actuate when an unbalanced voltage condition exists between the three phases of the generator. An oscillograph, used to record voltage applied across the neutral resistor, indicated that no fault had existed on the generator. The oscillograph was functionally tested and was shown to be operating correctly. Additionally, a megger reading of the generator confirmed that no internal fault existed.

With no generator fault, the cause of the trip was in the potential transformer circuitry. The transformer fuses were checked and no deficiencies were found. The potential transformers were checked for proper voltages on the primary and secondary sides. All voltages were acceptable. The secondary side connections were also cleaned to remove some slight corrosion on the contact surface. The generator lockout relays were found to be operating properly. Upon completion of troubleshooting, the cause could not be determined.

D. SAFETY ANALYSTS:

Plant and public safety were not affected. The generator neutral ground backup relay actuated and tripped the generator. The generator trip caused a turbine trip. The turbine trip caused the

reactor trip. Redundant trains of reactor protection RP JG! and engineered safety features (EF) JG! were operable, available, and effective in performing their design functions.

E. CORRECTIVE ACTIONS:

With the cause of the generator trip unknown, precautionary measures were taken to prevent an intermittent potential fuse failure from causing another generator trip. All potential transformer fuses were replaced. Previous experience with intermittent fuse failure and the generator voltage balance relay actuation supported this action. The suspect circuitry will be monitored by a digital fault recorder, for approximately 30 days. A Braidwood On-Site Review committee reviewed the troubleshooting and permission was granted to

restart the unit. To improve the reliability of the generator neutral ground circuitry, Modification (MP007) is planned. MP007 will consist of a relay and variable resistor in parallel with the generator neutral ground backup relay. This change will prevent a potential transformer fuse failure from causing a generator trip. MP007 will also replace the existing neutral ground relay and increase generator ground fault protection.

F. PREVIOUS OCCURRENCES:

None

G. COMPONENT FAILURE DATA:

This event was not the result of any known component failure, nor did any components fail as a result of this event.

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Commonwealth Edison
Braidwood Nuclear Power Station
Route #1, Box 84
Braceville, Illinois 60407
Telephone 815/458-2801

December 23, 1991
BW/91-0949

U. S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555

Dear Sir:

The enclosed Licensee Event Report from Braidwood Generating Station is being transmitted to you in accordance with requirements of 10CFR50.73(a)(2)(iv) which require a 30-day written report.

This report is number 91-006-00; Docket No. 50-457.

Very truly yours,

K. L. Kofron
Station Manager

Braidwood Nuclear Station

KLK/DN/sjs
(226/ZD85G)

Enclosure: Licensee Event Report No. 91-006-00

cc: NRC Region II Administrator
NRC Resident Inspector
INPO Record Center
CECo Distribution List

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